

BRCM PUBLIC SCHOOL, BAHAL**Exam:** 1st Pre Board Exam 09**Subject:** Computer Science**Class:** XII**Dated:** JAN 2009**Time:** 3:00 Hr.**Max. Marks:** 70**SET – 2**

- 1.(a) What is meant by alias? Explain how to declare alias? 2
- (b) Name the header file to which following built-in functions belong to : 2
 exit() rand() delay() open()
- (c) Rewrite the following program after removing the syntactical error(s), if any. 2
 Underline each correction.

```
#include <iostream.h>
const int Multiple 3;
void main()
{ val = 15;
  for(int c=1, c<=5; c++, val -=2)
    if(val % Multiple == 0)
      cout<< val * Multiple;
      cout<< endl;
    else
      cout<< val + Multiple <<endl;
  }
```
- (d) What is the output of the following program: 2

```
#include<iostream.h>
void main()
{ int a=35, *ptr = &a;
  cout<<a++<< " " <<*ptr<<endl;
  cout<<++a<< " " << ++(*ptr)<<endl;
}
```
- (e) What is the output of the following program segments: 3

```
int fun(int n)
{if (n==0)
  return 1;
  else
  return (n * fun(n-1));
}
int fun2(int &i)
{int f;
  f=i/12;
  i=i%12;
  return f;
}
void main()
{ int in=17;
  cout<<"First line ="<<fun2(in)<<endl;
  cout<<"Second line ="<<in<<endl;
  cout<<"Third line ="<<fun(in);
}
```

- (f) Raising a number n to a power p is the same as multiplying n by itself p times. Write a function called `power` that takes two arguments, a double value for n and an int value for p , and returns the result as double value. Use default argument of 2 for p , so that if this argument is omitted that number will be squared. Write the main function that gets value from the user to test power function. 3
- 2.(a) What do you understand by inheritance? Write the advantage of inheritance? 2
- (b) Answer the questions (i) and (ii) after going through the following class: 2
- ```
class Exam
{
 int year; char college[20];
 public:
 Exam(int y, char col[]) //Constructor 1
 Exam(Exam & t); //Constructor 2
};
```
- i. Write complete definition for Constructor1 and Constructor2  
ii. Create an object, such that it invokes Constructor1 and Constructor2
- (c) Define a class named `ADMISSION` in c++ with the following descriptions: 3
- Private Members:
- |         |                             |
|---------|-----------------------------|
| ADNO    | integer(Ranges 10 – 2000)   |
| Name    | Array of characters(Stirng) |
| Classes | Character                   |
| Fees    | Float                       |
- Public Members:
- Function `Read( )` to read an object of `ADMISSION` type.  
Function `Display( )` to display the details of an Object.  
Function `DrawNos( )` to choose 2 students randomly(using random function), and display the details assuming a global array `ARR[]` having 100 students information.
- (c) Answer the questions (i) to (iii) based on the following code: 4
- ```
class furniture
{
    char Type;
    char Model[10];
    public:
    furniture();
    void Read_fur_details( );
    void Disp_fur_detailsO;
};

class sofa : public furniture
{
    int no_of_seats;
    float cost_of_sofa;
    public:
    void Read_sofa_details( );
    void Disp_sofa_details( );
};
```

```

class office: private sofa
{
    int no_of_pieces;
    char delivery_date[10];
public:
    void Read_office_details();
    void Disp_office_details();
};

```

```

void main()
{
    office MyFurniture;
}

```

- (i) Mention the member names which are accessible by MyFurniture declared in main () function?
- (ii) What is the size of object MyFurniture and class sofa in bytes?
- (iii) Mention the names of functions accessible from the member function Read_office_details() of class office.
- (iv) Name the data members accessible by the object of class sofa?

- 3.(a) Write a function in c++ which accepts two dimensional array of integer X[][] and its size N as arguments and separate the data into two array A[] and B[], where A[] will store only even numbers and B[] array will store odd numbers from the 2D array X[][].

If X[][] =

5 2 3 6 5	Then A[] = 2, 6, 4, 2, 8, 8, 4, 2, 2, 2, 2
7 3 4 2 1	And
5 8 3 8 5	
7 3 4 2 1	B[] = 5, 3, 5, 7, 3, 1, 5, 3, 5, 7, 3, 1, 1, 1
2 1 2 1 2	

- (b) An float type array X[30][10] is stored in the memory. If the base address of X is 4500, find out memory locations of X[12][8] and X[14][2], if the content is stored along the Column. 3

- (c) Write the equivalent prefix expression for 20, 45, +, 20, 10, -, 15, +, * 2

- (d) Consider the following portion of a program, which implements passengers Stack of train. Write the definition of function push() and pop() (whose prototype is shown below); to insert and delete a new node in the stack with required information. 4

```

struct NODE
{
    long ticketno;
    char PName[20]; // passenger Name
    NODE *next;
};
class stackoftrain
{
    NODE *top;
public:
    stackoftrain() { top = NULL; }
    void push();
    void pop();
    ~stackoftrain();
};

```

};

- (e) Define a function `swaparray(int [], int)` that would accept a one dimensional integer array `NUMBERS` and its size `N`. The function should rearrange the array in such a way that the values of alternate locations of the array are exchanged (Assume the size of the array to be even) 2
 (Example : If the array initially contains { 2,5,9,14,17,8,9,16} then after rearrangement the array should contain {5,2,14,9,8,17,16,9})

- 4.(a) A “student.data” file exist, with the objects of class `students`. Assuming, the file has just been opened through the `ofstream` class mode. 1
 (i) Give a single command to place the file pointer to the third record from beginning.
 (ii) In continuation to the above, command give a command to bring file pointer to the beginning of last record.

- (b) Write a user define function in C++ to read the content from a text file `NOTE.TXT`, count and display the number of vowels (i.e with ‘A’, ‘E’, ‘I’, ‘O’, ‘U’) present in it. 2

- (c) Following is the class of each record in a data file named “PRODUCT.DAT” 3
 class `prod`
 { `int pcode;`
 `char Pname[20];`
 `int stock;`
 public:
 `void input() // function to input the data`
 { `cin>>pcode; gets(Pname); cin>>stock; }`
 `void display() // function to display the data`
 { `cout<<pcode<< “ ” <<Pname<< “ ” <<stock<<endl; }`
 `void newstock() // function to read new stock`
 { `cin>>stock; }`
 `int pcode-ret() // function to return the pcode to match`
 { `return pcode;`
 }
 }
 };

Write a function `UPDATE` in C++ to update the file with new stock value. The function should input the product code and match the files product code and update the new stock after reading new stock from the class during the execution of the program.

- 5(a) Given two relation `R1` and `R2` 1

S#	StName	Class
100	Anil	7
101	Ajit	8
102	Bikram	9

Sub#	SubName
S1	Computer
S2	Physics

Give the Cartesian product of `R1` and `R2`?

- (b) Study the following table DOCTOR and SALARY and write SQL command for the give questions: 6

Table : DOCTOR

ID	NAME	DEPT	SEX	EXPERIENCE
101	John	ENT	M	12
104	Smith	ORTHOPEDIC	M	5
107	George	CARDIOLOGY	M	10
114	Lara	SKIN	F	3
109	K George	MEDICINE	F	9
105	Johnson	ORHTOPEDIC	M	10
117	Lucy	ENT	F	3
111	Bill	MEDICINE	F	12
130	Morhpy	ORTHOPEDIC	M	15

Table : SALARY

ID	BASIC	ALLOWANCE	CONSULTATION
101	12000	1000	300
104	23000	2300	500
107	32000	4000	500
114	12000	5200	100
109	42000	1400	200
105	18900	1690	300
130	21700	2600	300

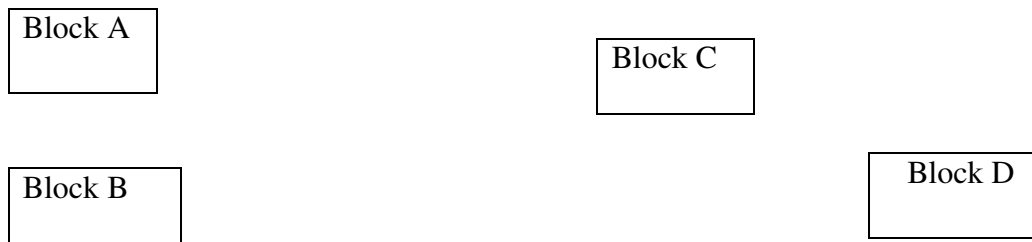
- (1) Display Name of all doctors who are in "MEDICINE" having more than 10 years experience from the table DOCTOR.
- (2) Display a Report with Dept, total salary paid to the departments. Where salary = Basic + Allowance.
- (3) Write the command to add one more column SALARY of NUMBER(9) in the SALARY table.
- (4) Calculate Salary as BASIC + ALLOWANCE and store in the Field SALARY of Salary table.
- (5) Give the Output of the following:
 - a) SELECT count(*) from DOCTOR where SEX = 'F';
 - b) SELECT NAME, DEPT, BASIC FROM DOCTOR, SALARY where DEPT='ENT' AND DOCTOR.ID = SALARY.ID;
 - c) SELECT AVG(BASIC), AVG(ALLOWANCE) FROM DOCTOR, SALARY where DEPT='ORTHOPEDIC' AND DOCTOR.ID = SALARY.ID;
 - d) SELECT SEX, COUNT(*) FROM DOCTOR GROUP BY SEX;

- 6.(a) State Absorption Law Laws. Verify one of the Absorption Laws using a truth table 2
- (b) Write the dual and complement of the Boolean expression $A + B' . A + 1$ 1
- (c) Obtain a simplified form for a Boolean expression $F(U,V,W,Z) = \prod(0,1,3,4,5,6,10,11,13,15)$ using Karnaugh Map. 3

- (d) Represent the Boolean expression $X \cdot Y' + Z$ with the help of NOR gates only. 1
- (e) Write the Sum of Product form of the function $H(U,V,W)$. Truth table representation of H is as follows: 1

U	V	W	H
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	1

- 7.(a) What is the purpose of using gateway in context of networking? 1
- (b) Write two application of Cyber Law. 1
- (c) Expand the following terminologies: 1
 (i) XML (ii) CDMA (iii) GSM (iv) HTTP
- (d) Explain the function of Cookies and Firewall? 1
- (e) Knowledge Supplement Organization has set up its new center at Mangalore for its office and web based activities. It has 4 blocks of buildings as shown in the diagram below.



Center to center distance between various blocks is :

Block A to Block B	50 m
Block B to Block C	150 m
Block C to Block D	25 m
Block A to Block D	175 m
Block B to Block D	125 m
Block A to Block C	90 m

Number of Computers in various blocks are :

Block A	25
Block B	50
Block C	125
Block D	10

- (i) Suggest a cable layout of connections between the blocks.
- (ii) Suggest the most suitable place (i.e. block) to house the server of this organization with a suitable reason.
- (iii) Suggest the placement of the following devices with justification.
 - (a) Repeater
 - (b) Hub/Switch
- (iv) The organization is planning to link its front office situated in the city in a Hilly region where cable connection is not feasible, suggest an economic way to connect it with reasonably high speed.

* * * * *